

REMARKS

This is a response to the Office Action mailed September 24, 2007. When the Office Action was rendered, claims 9-19, 63-103, 112-118, 124-128, 131, 132, and 160 were pending. Claims 16, 17, 63, and 131 have been amended by this response. Claims 1-15, 18-62, 88, 104-130, and 133-160 are cancelled.

Rejection of Claims 16, 17, 131 and 132 Under 35 U.S.C. 102(e)

The Examiner rejected claims 16, 17, 131, and 132 under 35 U.S.C. 102(e) as being anticipated by Rocha-Alvarez. In making this rejection, the Examiner stated that "Rocha-Alvarez discloses a plurality of small chambers connected to common gas supply and exhaust for increased throughput."

However, independent claims 17 and 131 have been amended to recite "individually controlling amounts of components of the reaction gases provided to each of the chambers with gas flow controllers." Support for this amendment is in paragraph [00116] of the specification as originally filed.

By way of contrast, Rocha-Alvarez discloses a gas flow control loop wherein a gas flow measuring device (GFM) 182 measures gas flow to one chamber so as to facilitate the use of a gas flow control apparatus (GFC) 184 to control gas flow to another chamber as discussed in paragraph [0033]. Thus, Rocha-Alvarez does not teach "individually controlling amounts of components of the reaction gases provided to each of the chambers" and also does not disclose the use of gas flow controllers suitable for doing so. Rather, according to Rocha-Alvarez the gas flow control apparatus 184 for one chamber is "responsive to flow measurement signal output 155 from the GFM 182" [0034] which measures flow to the other chamber. As such, it is clear that gas flow through one chamber is related to (controlled by) gas flow to the other chamber. Moreover, an object of Rocha-Alvarez is to provide a method and apparatus for fluid

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flow control wherein "the gas flow from a first supply to a first processing region is used to control the gas flow of a second supply to a second processing region" (Abstract).

Such control of the gas flow to one chamber based upon gas flow to another chamber is contrary to the basic concepts of individually controlling gas flow to each chamber. Indeed, it is respectfully submitted that such teaching of controlling gas flow to one chamber based upon gas flow to another chamber teaches away from the claimed use of individual control.

It is worthwhile to appreciate that the claimed individual control of gas flow provides substantial advantages in the processing of semiconductors. Inevitable variations in parameters, such as the temperature of the chemical vapor deposition (CVD) reaction chamber and flow resistance in the reactant conduits, result in differences between reaction chambers. Such differences can result in undesirable differences in the chemical vapor deposition process that cause process inefficiencies. These differences can be compensated for, at least in part, via the use of individual control of gas flow to each chamber. In this manner, efficiency can be substantially enhanced and the cost of production consequently reduced.

It is respectfully submitted that none of the cited references, taken either alone or in combination with one another, either disclose or make obvious a method for chemical vapor deposition comprising "individually controlling amounts of components of the reaction gases provided to each of the chambers with gas flow controllers," as recited in amended claims 16 and 131. It is therefore respectfully submitted that independent claims 16 and 131, as well as claims 17 and 131 that depend therefrom, respectively, are in condition for allowance.

Rejection of Claim 88 Under 35 U.S.C. 102(b)

The Examiner rejected claim 88 under 35 U.S.C. 102(b) as being anticipated by Jurgenson. However, it is respectfully submitted that Jurgenson neither discloses nor

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makes obvious the use of SiC coated graphite, SiC quartz, and/or molybdenum to form the gas discharge ring 5 thereof.

Rather, Jurgenson states that the gas discharge ring 5 "is formed of solid graphite" (column 3, lines 2-4). In stating that the gas discharge ring 5 is formed of solid graphite, Jurgenson appears to be emphasizing that no other material are used in the construction of the gas discharge ring 5.

Independent claim 63 has been amended to recite some of the subject matter of claim 88, namely:

"enhancing laminar flow from a reaction gas inlet formed generally centrally in the chamber to a ring diffuser disposed proximate a periphery of the wafer carrier, wherein the ring diffuser is comprised of at least one of SiC coated graphite, SiC quartz, or molybdenum." [emphasis added]

It is respectfully submitted that none of the cited references, taken either alone or in combination with one another, either disclose or make obvious "wherein the ring diffuser is comprised of at least one of SiC coated graphite, SiC quartz, or molybdenum," as recited in amended independent claim 63. It is therefore respectfully submitted that claim 63, as well as claims 64-103 that depend therefrom, are in condition for allowance.

It is respectfully submitted that the dependent claims are independently patentable with respect to the independent claims. For example, dependent claims 89-90 recite the use of a seal for "mitigating reaction gas flow out of the chamber, other than from the reaction gas outlet." None of the cited references either disclose or make obvious the use of such a seal.

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CONCLUSION

It is respectfully submitted that all of the pending claims are in condition for immediate allowance. Reconsideration and an early allowance are therefore respectfully requested.

If the Examiner has any questions or concerns, a telephone call to the undersigned at (949) 752-7040 is welcomed and encouraged.


Certification of Facsimile Transmission

I hereby certify that this paper is being facsimile transmitted to the U.S. Patent and Trademark Office on the date shown below.


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February 25, 2008
Date of Signature

Respectfully submitted,


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